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Sage Creek Coal Basin
Judith Basin County, Montana
Abandoned Mine Reclamation

FINAL REPORT

IFB 4166 - G

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SAGE CREEK COAL BASIN ABANDONED MINE RECLAMATION PROJECT

INTRODUCTION

The construction phase of the reclamation activities performed at the Hughes D and E sites of the Sage Creek Coal Basin of the Lewistown Coal Field was initiated at the end of July, 1984, and completed in late May, 1985. This reclamation activity was performed under State of Montana Invitation for Bid Number 4166-G.

The reclamation plan was prepared by OEA Research of Helena and presented to the Department of State Lands in a report entitled "Lewistown Coal Field Reclamation Plan" and dated August, 1982. Robert Peccia and Associates prepared the engineering plans and specifications from this report and conducted additional field work.

The plans and specifications were drawn up pursuant to the objectives established in Montana's Permanent Program Strip and Underground Mine Reclamation Rules and Regulations, specifically ARM 26.4.1235(3). The primary criteria used for preparing the reclamation plans were the protection of human life, health and safety, protection of the environment, abatement of adverse social and economic impacts of past coal mining, and the improvement of the use of natural resources.

The reclamation work to be performed at the Sage Creek Coal Basin was divided into two schedules. The work to be performed at the Hughes E sites around Scholtztown was outlined in Schedule I. The work to be performed at the Hughes D sites around Lehigh was outlined in Schedule II. Robert Peccia and Associates provided quality control inspection services for all of the work executed at the Hughes D and E sites.

The contract documents provided for each of the work items of both schedules to be bid on a lump sum basis. The contract stipulated that the Contractor would have to perform the work in a manner sufficient to fulfill the intent of the contract; the quantities supplied in the plans and specifications were identified as approximate, and the Contractor was responsible for determining the amount of work the intent of the contract entailed.

Attachment 1 shows the bid items covered under each of the two schedules, lists the approximate quantities, and shows the pertinent information for the successful bidder for each schedule.

SCHEDULE I

Eight sites were identified for reclamation work under the Schedule I contracts; all of these sites are located at the Hughes E area around Scholtztown. The Hughes E site is generally rolling grassland. The mines are located along the northern side of the coulee where the northern dipping coal seam is exposed at the surface. Some of the adits to these mines were still open, and examination of the workings indicated that a type of room and pillar mining was utilized in the area. Unfortunately, the extent of the workings in the area was not determined because maps of the mines were not available.

Reclamation of these sites included excavation, hauling, and placement of coal mine waste material, removing mining-related debris, reconstructing drainage channels, reshaping slopes; spreading lime (Cotrell Dust), topsoiling, fertilizing, seeding and mulching, fencing, and general cleanup of the area. The work also required the development of a topsoil source which was located south of the county road near Site 3.

Sherrodd, Inc. of Pompeys Pillar, Montana, was the lowest bidder for the work outlined under the Schedule I contract with a bid of $85,609.80. Two change orders in the amounts of $2,925.00 and $1,170.00 were issued during the contract period; the first one was issued for installation of additional fencing, the second was a remobilization payment. The final contract price was $89,704.80. The Notice to Proceed for the work was dated July 25, 1984; the contract period was 120 calendar days, through November 21, 1984.

The Contractor began work on August 13, 1984, and completed a majority of the work by November 1, 1984. The Contractor then expressed the work would be completed when the seeding and mulching of the sites was performed. The work that still needed to be completed was outlined in a letter to Mr. Bill Sherrodd, dated November 9, 1984. Unfortunately, an early winter precluded the completion of the work during 1984. Mr. Sherrodd requested and was given a winter shutdown on December 4, 1984. The Contractor began work in the spring of 1985 on April 1 and completed all work, with the exception of reclaiming the rip rap source area, by May 20, 1985.

Site 1

The work at Site 1 included excavation of approximately 4,700 cubic yards of spoils materials, closure of an open adit, and reclamation of approximately 2.4 acres.

Site 2

The work at Site 2 included excavation of approximately 875 cubic yards of spoils material, closure of an open adit and an open shaft, and reclamation of approximately .9 acres.

Site 3

The work at Site 3 included closure of an adit and reclamation of approximately five acres. The work also included placement, contouring, and topsoiling of the spoils material excavated from the sites covered under Schedule I.

Site 4

The work at Site 4 included excavation of approximately 1,250 cubic yards of spoils material, closure of three open adits, reclamation of approximately 1.6 acres, and reconstructing and riprapping approximately 1,590 linear feet of stream channel. Some of the spoils at this site were utilized for embankment material to achieve more desirable contours; this material was not utilized where it might come in contact with groundwater and was covered with a minimum of six inches of topsoil.

Site 5

The work at Site 5 included excavation of approximately 3,435 cubic yards of spoils material, closure of an open adit and an open subsidence depression, and reclamation of approximately 2.0 acres.

Site 6

The work at Site 6 included excavation of approximately 4,436 cubic yards of spoils material, closure of an open adit, reclamation of approximately 2.6 acres, reconstruction of approximately 3,300 linear feet of road shoulder, and reconstruction and riprapping of 760 linear feet of stream channel.

Site 7

The work at Site 7 included excavation of approximately 494 cubic yards of spoils material, closure of an open shaft, and reclamation of .3 acres.

Site 8

The work at Site 8 included excavation of approximately 100 cubic yards of spoils material, closure of an open shaft, reclamation of .3 acres, and installation of tandem arch culverts under the country road.

Discussion

The work required under the Schedule I contract was ideally suited for the type of equipment utilized by earthwork contractors. Sherrodd, Inc. utilized a small bulldozer, a tracked excavator, two small paddle-wheel scrapers, and a tractor.

The bulldozers and scrapers were used to move the large amounts of spoils material which were required by the Contract Documents. The excavator was used to excavate and place rip rap.

The Contractor seeded all areas with a drill seeder. Hay mulch was applied with a hay-feeder machine and crimped into the ground with an agricultural disc with the discs replaced with straight, notched discs.

The Contractor, Sherrodd, Inc., did an acceptable job on most of the tasks required by the Schedule I contract. However, on several of the work items, the Contractor had little or no understanding of the intent of the contract and was not responsive to completing the work as specified. These items were specifically the rip rap at Site 4 and the drainage facility at Site 6. Correspondence on file at Department of State Lands and Robert Peccia and Associates outlines the course of events regarding this work.

SCHEDULE II

Three sites were identified for reclamation work under the Schedule II contract; all of these sites are located at the Hughes D area around Lehigh. The topography of the Hughes D area is generally rolling grassland.

One major mine was located at the Lehigh townsite of the Hughes D area. A 12 foot by 30 foot shaft was utilized for access to the underground workings. The shaft is located 50 feet west of the large concrete tipple at the Lehigh townsite and is currently utilized as an artesian well for livestock watering.

Examination of the Hughes D area revealed that a significant amount of spoils material was deposited throughout the Lehigh townsite during mining operations. The water table at the townsite was found to be about three feet below the surface, so it is reasonable to suspect that the spoils material was used to raise the elevation of of the ground at the townsite. Much of the deposited spoils material was revegetated and was not discovered until some of the vegetation was removed by equipment.

The largest part of the spoils material generated by the Lehigh mine was transported by tramway (Site 9) to the coulee directly north of

the Lehigh townsite. The tramway deposited the spoils material in two large piles along the southern side of the coulee and one enormous pile extending diagonally across the coulee. The latter pile acts as a dam after periods of significant precipitation.

Unfortunately, the extent of the workings of the mine was not determined because minimal surface disturbance attributable to underground workings was encountered and the unavailability of the maps of the mines.

Reclamation of these sites included excavation, hauling and placement of coal mine waste material, removing mining-related debris, constructing drainage channels, leveling and filling concrete foundations, applying bentonite, reshaping slopes, spreading lime (Cotrell Dust), topsoiling, fertilizing, seeding and mulching, fencing, and general cleanup of the area. The work also required the development of a topsoil source and a spoils deposition area which was located in the northeastern section of the Lehigh townsite.

Luckinbill Construction, Inc. of Columbus, Montana, was the lowest bidder for the work outlined under the Schedule II contract with a bid of $104,679.10. Two change orders in the amounts of $6,425.00 and $2,202.20 were issued during the tenure of the contract period. The change orders were required for topsoiling, foundation removal, and seeding not outlined in the original reclamation plan. The final contract price was $113,306.30. The Notice to Proceed for the work was dated July 25, 1984; the contract period was 120 calendar days through November 21, 1984.

The Contractor commenced work on July 26, 1984, and completed all work at the site on October 11, 1984. Final inspection and acceptance of the work was performed on November 11, 1984.

The following briefly describes the work performed at each of the three work sites 9, 10, and 11.

Site 9

Site 9 was the area disturbed by the tramway. The work at Site 9 included grading and reclamation of approximately 5.0 acres.

Site 10

Site 10 was the area disturbed by spoils deposition in the coulee directly north of the Lehigh townsite. The work at Site 10 included excavation and placement of approximately 10,340 cubic yards of spoils material, excavation and placement of approximately 600 cubic yards of

topsoil, placement of approximately 103 tons of bentonite, and reclamation of 3.0 acres.

Site 11

Site 11 was the Lehigh townsite. The work at Site 11 included the removal of approximately ten foundations and filling of the resulting holes, the excavation and placement of about 2,000 cubic yards of spoils material, reconstruction of approximately 1,400 linear feet of stream channel, closure of a concrete mine entrance structure with two cinder block walls, covering a mine shaft with a 12 foot by 30 foot reinforced concrete slab, and reclamation of 21.4 acres.

Discussion

The work required under the Schedule II contract was ideally suited for the type of equipment typically utilized by earthwork contractors. Luckinbill Construction, Inc. utilized a D6 and a D8 bulldozer, a large-tracked excavator, a medium-sized (approx. 10 cubic yards) paddle-wheel scraper, and a motor grader.

The bulldozers were utilized to move large amounts of material where required and to remove structures. The excavator was used to clean areas not accessible to the bulldozers, excavate drainage channels, and clean the shaft opening. The scraper was utilized for loading and hauling material on all of the sites. The motor grader was used to generate topsoil and spread lime.

Because of the unconsolidated nature of the spoils material, the scraper was able to perform loading and hauling tasks efficiently. The haul distances required by the work were also ideal for scraper use.

The motor grader performed the task of spreading the lime (Cotrell Dust) reasonably well. Because the areas requiring lime application were in general relatively flat, the appropriate amount of lime material could be adequately spread with the grader. This method of lime application, however, would not be appropriate in areas with steep slopes. This method also shows severe limitations for application during windy periods; this comment seems appropriate for all dry application methods.

The Contractor seeded all areas with a drill seeder. Hay mulch was applied by a mulch gun and crimped into the ground. The crimper utilized was the type which resembles a disc plow. The crimper performed the task of tucking the hay into the ground very well; however, it was found that the high winds typical to the Sage Creek area sheared off much of the crimped hay at ground level.

The Contractor, Luckinbill Construction, Inc., did an outstanding job of performing the tasks required by the Schedule II contract. The Contractor recognized the intent of the plans and specifications and was most interested in performing the required work. This interest facilitated an acceptable completion of the project.

ATTACHMENT 1

PAYMENT ITEMS FOR
SAGE CREEK COAL BASIN ABANDONED MINE RECLAMATION PROJECT

SCHEDULE I

Sherrodd Construction
Pompeys Pillar, MT
Lic. #06077A

Item	Quantity	Unit	Description	Unit Price	Total
1.	1.0	Lump Sum	Debris Removal	$ 4,000.00	$ 4,000.00
2.	15,284.0	cu.yd.	Excavation and Embankment	1.00	15,294.00
3.	253.0	cu.yd.	Hand-Laid and Random Riprap	20.00	5,060.00
4.	4,100.0	cu.yd.	Topsoil	1.00	4,100.00
5.	72,932.0	sq.yd.	Site Grading	0.15	10,939.80
6.	162.0	tons	Lime Stabilization	46.00	7,452.00
7.	18.3	acres	Seeding and Fertilizing	800.00	14,640.00
8.	11,700.0	lin.ft.	Fencing	1.00	11,700.00
9.	84.0	lin.ft.	Arch RCP Class III	36.00	3,024.00
10.	2,350.0	lin.ft.	Stream Channel Construction	4.00	9,400.00
SUBTOTAL BASE PAYMENTS					$85,609.80
CHANGE ORDER NO. 1					$ 2,925.00
CHANGE ORDER NO. 2					1,170.00
SUBTOTAL CHANGE ORDER PAYMENTS					$ 4,095.00
TOTAL PAYMENTS, SCHEDULE I					$89,704.80

SCHEDULE II

Luckinbill Construction
Columbus, MT
Lic. #4127A

Item	Quantity	Unit	Description	Unit Price	Total
1.	1.0	Lump Sum	Debris Removal	$ 15,000.00	$ 15,000.00
2.	12,290.0	cu.yd.	Excavation and Embankment	1.72	21,138.80
3.	430.0	cu.yd.	Topsoil	3.30	1,419.00
4.	142,666.0	sq.yd.	Site Grading	0.05	7,133.30
5.	342.0	tons	Lime Stabilization	37.00	12,654.00
6.	29.5	acres	Seeding and Fertilizing	660.00	19,470.00
7.	14,520.0	lin.ft.	Fencing	0.95	13,794.00
8.	103.0	tons	Bentonite Application	90.00	9,270.00
9.	1.0	Lump Sum	Close Mine Entrance and Close Shaft	4,800.00	4,800.00
SUBTOTAL BASE PAYMENTS					$104,679.10
CHANGE ORDER NO. 1 (Topsoiling, foundation removal)					$ 6,425.00
CHANGE ORDER NO. 2 (Topsoiling, foundation removal, seeding)					2,202.20
SUBTOTAL CHANGE ORDER PAYMENTS					$ 8,627.20
TOTAL PAYMENTS, SCHEDULE II					$113,306.30
TOTAL BASE BID (Actual)					$104,679.10